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some Cretaceous or Eocene group of spinous fishes with like numbers of vertebræ.

This view is probably correct. Certainly paleontology and taxonomy agree in regarding the tropical flounders, percoids, scorpænoids, and blennies, with few vertebræ, as on the whole more nearly primitive than the cold-water or fresh-water forms which have many vertebræ. At the same time, these tropical forms are the most highly organized, the individual parts of the skeleton being most highly developed.

We may perhaps regard the tropical forms as having better maintained their primitive character of a highly developed skeleton, while the arctic and fluviatile forms have become degraded, their parts less developed and increased in number through repetition, this being due to less severity of selection and perhaps the demand for flexibility rather than strength of body.

In any case, the progressive increase in numbers of vertebræ in various groups, as we leave the coral-reef region, is an unquestionable fact, and must have some cause potent among all fishes. The only cause yet suggested is that of the demands of natural selection in the tropics, with its cessation or reversal elsewhere. But in many groups it is certain that the forms with many vertebræ were not as nearly primitive as the others.

D. S. J.

Boulenger on Selenichthyes.—In the *Annals and Magazine of Natural History* (Vol. X, pp. 147–153) Dr. G. A. Boulenger takes up the relationship of the large pelagic fish known as the opah or moon-fish (*Lampris luna*).

This species has been usually placed, without evident reason, with the mackerel-like forms. It has, however, the very archaic number (15 to 17) of rays in the ventral fins, and these fins are subabdominal in position, although placed well forward. It has the clavicle very large, and behind it, attached to the hypercoracoid, is a very large, flat plate, called the infraclavicle, apparently corresponding in Boulenger's opinion to the interclavicle of sticklebacks. The small hypercoracoid above this plate is on the level of the hypocoracoid, and out of its normal position.

Dr. Boulenger makes this fish the type of a new division called Selenichthyes, moon-fishes. This he regards as nearest allied to the Hemibranchii; and for the two groups, with the Lophobranchii and Hypostomides, he proposes a new suborder, Catosteomi, characterized by the development of interclavicles.

As to this, it may be urged that it is not clear that any close affinity exists between *Lampris* and the others (sticklebacks, pipefishes, sea horses and sea dragons), referred to *Catosteomi*. The retention of various archaic characters constitutes the sole bond of union excepting the presence of interclavicles. Furthermore, according to Mr. E. C. Starks, interclavicles are wanting in *Centriscidæ* and *Macrorhamphosidæ*, both families of undoubted hemibranchs. He regards the interclavicle as a mere backward or downward extension of the hypercoracoid, not as a separate bone. There is no evidence that the infraclavicle of *Lampris* is homologous with this structure: It is very different in form and place from the interclavicle of the stickleback, and it may be the ordinary hypercoracoid simply enlarged.

There is no doubt of the validity of the group *Selenichthyes*, whatever its relation to the other *Catosteomi*. The present writer had defined it as a distinct suborder, under another name, in a paper now in press.

In the same paper Dr. Boulenger defines the families of *Catosteomi*, adding a new one, *Protoryngnathidæ*, based on fossil sticklebacks, with tubiform snout, free ribs, and the first vertebra enlarged.

D. S. J.

Meek on Fishes of Mexico.—One of the very best of recent faunal papers is Dr. Seth E. Meek's "Contribution to the Ichthyology of Mexico."¹ It is based on the largest collection of Mexican fishes yet made. This was obtained in the spring of 1901 by Dr. Meek and Mr. Frank E. Lutz in the lakes and streams of the central table-land of Mexico. Ninety-seven species were obtained. Many of these had been secured in the previous expeditions of A. J. Woolman and of Jordan and Snyder to the same region, but an unexpectedly large number of new ones were also secured. New genera are *Zoogoneticus*, based on *Platyphacilus quitzeensis*; *Chapalichthys*, on *Characodon encaustus*; *Skiffia*, allied to *Characodon*, based on *Skiffia lermæ*; and *Melaniris*, based on *Melaniris balsanus*, allied to *Chirostoma*; *Xenendum* proves to be inseparable from *Goodea*. The new species are *Rhamdia oaxacæ*, from Oaxaca; *Catostomus sonorensis*, from Chihuahua; *Algansea rubescens*, from Ocatlan, Lake Chapala; *Gila minacæ*, from Chihuahua; *Aztecula mexicana* from Queretaro; *Notropis robustus*, from Chihuahua; *Notropis santarosaliæ* from Chihuahua; *Evarra tlahuacensis* from Lake Chalco, Mexico; *Fundulus oaxacæ*, from Oaxaca; *Zoogoneticus diazi*, from Lake Pátz-

¹ *Publications Field Columb. Mus.*, Zool. Ser., vol. iii, No. 6.